

Docket No.: 52321-012

**PATENT**



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of

Sing-Wang CHENG, et al.

Serial No.: 09/373,605

Filed: August 13, 1999

For: HEAT TEMPERATURE RAISING SYSTEM

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Group Art Unit: 3743

Examiner: C. Atkinson

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**RESPONSE TO OFFICIAL ACTION**

Commissioner for Patents  
Washington, DC 20231

Sir:

This is in response to the Official Action dated November 30, 2001 in this application. Reconsideration of the application is requested in view of the following remarks and accompanying evidence.

It is noted that the Examiner has held that newly submitted claims 62-65 are directed to inventions distinct from the elected inventions of claims 53-61. It is further noted that claim 62-65 are withdrawn from consideration as directed to a non-elected invention. It is further noted that the original restriction requirement has been made final so that claims 31-35, 40-41, 43, 47-52 and 62-65 stand withdrawn from further consideration in this application as directed to separate inventions. Applicant's reserve the right to file divisional applications directed to the non-elected subject matter.

The specification is also objected to under 37 CFR 1.71 on the ground that the originally filed specification fails to disclose the elected invention and species having the vapor directly contacting the first medium and the heat source. A rejection of claims 52-

61 is also made under 35 USC 112 for the same reason. Reconsideration of this rejection is requested.

Apparently this rejection is based on the language of the claims which state that the first heat carrying medium and the heat source may be "directly or indirectly" contacted. While a substantial portion of applicant's specification is concerned with indirect contact of the heat carrying medium and the heat source, the Examiners attention is directed to page 15, beginning at line 17, where different operational methods are disclosed. At page 15, lines 19-23, a method is described wherein the heat source and the heat carrying medium do not make direct contact, that is an indirect contact system. However, at page 15, lines 23-26 the specification clearly points out how the method is conducted when the heat source and the HCM medium make direct contact. Therefore, since the specification does provide the necessary support, withdrawal of the objection to the specification and rejection of the claims are believed to be in order, and reconsideration is requested.

Claims 53-61 also stand rejected as obvious and unpatentable over the Cheng patent 5,526,653 in view of newly cited U.S. patent 4,253,518 to Minesi. The Examiner considers that the Cheng patent discloses all the claimed features of the invention with the exception of the claimed mixture of compounds and a pressure changing device. The Examiner considers it would have been obvious to one of ordinary skill at the time the invention was made to use the claimed mixture of compounds since it is within the general skill of a worker in the art to select a known material on the basis of its suitability for an intended use as a matter of obvious design choice. Further Minesi is relied on as disclosing a heat pipe having a pressure changing device for the purpose of operating

within a desired temperature range. This rejection is again respectfully traversed and reconsideration is requested.

It is first pointed out that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to use the claimed mixture of compounds because there is no motivation in the Cheng patent to lead one of skill in the art to use the claimed mixture of compounds. Thus the conclusion of the Examiner is clearly based on hindsight and is improper. Further there is no suggestion in either of the references that the heat pipe and pressure changing device of Minesi could be incorporated into the system of Cheng for the purpose alleged. Any such suggestions must be made by the references themselves and clearly that is not the case here. In re Schaffer, 108 U.S.P.Q. 326; In re Shapleigh, 115 U.S.P.Q. 129.

As pointed out in Schaffer, it is not enough for a valid rejection to view the prior art in retrospect once an applicant's disclosure is known. The art applied should be viewed by itself to see if it is fairly discloses doing what an applicant has done.

The problem with this prior art rejection is that there is no motivation in either of the references relied on by the Examiner to suggest this combination. In re. Antonie, 195 USPG. (CCPA 1977); In re Kratz, 201 USPQ71. Further, as pointed out by the Board of Appeals in Ex parte Levengood, 27 USPG 2d 1300, the "Examiner cannot establish obviousness through references describing various aspects of applicant's invention unless the Examiner also provides evidence of motivating force to impel a person skilled in the art to do what applicant has done". Applicant submits that here, for reasons pointed out below, there is no motivation to be found in the references to combine them for any reason.

The Examiner's attention is also respectfully invited to the recent Federal Circuit decision, in re Lee, Case No.: 00-1158 (January 18, 2002). In this case the court held that the factual question of motivation is material to patentability, and cannot be resolved on subjective belief and unknown authority, but rather must be based on objective evidence of record. In other words, the court held that an examiners conclusion on the question of obviousness cannot be subjective but must be supported by the evidence, that is the references on which the obviousness rejection is based. Therefore, in this application, the Examiners conclusions that the claimed invention is obvious must find basis in the references themselves.

As pointed out previously, the patent to Cheng discloses an air conditioning system where the method consists of taking in heat from a first mass of air at a first temperature by vaporizing a mass of water under a reduced pressure, upgrading the heat by absorbing the water vapor into an absorbing solution and discharging the heat of absorption at an elevated temperature to a second air mass or cooling water. This is clearly a different system than is claimed herein. As will be noted from applicant's claims, the main claim preamble requires that the heat be transferred from a heat source to a heat sink where the temperature of the heat sink is higher than the temperature of the heat source. This is not suggested in the Cheng patent. Further applicant's claims require in step (d) applying a first pressure to the heat temperature raising medium, and changing the pressure applied to the heat temperature raising medium from a first pressure to a second pressure in step (e), whereby heat is transferred by latent heat of fusion from the heat temperature raising medium to a second heat carrying medium as recited in step (f). None of these steps are taught or suggested by the Cheng reference. Therefore,

as required by applicant's claim, does not disclose applicants method steps, and does not disclose or suggest the sequence of steps required by applicant's claims. Therefore, the patent to Cheng is not sufficient to raise a prima facie case of obviousness against the claimed subject matter.

The Examiner takes the position that the Cheng '653 patent discloses all the claimed features of the invention except for the pressure changing device which is made obvious by newly cited Minesa, and the use of the claimed mixture of compounds. The newly cited patent to Minesa is directed to a cooling installation system wherein a chamber is connected to an expansion vessel through a valve calibrated at a predetermined opening pressure depending on the nature of the heat carrier fluid and on the maximum temperature desired within the chamber and/or on the element to be cooled. In other words, the Minesi device includes an expansion vessel which has a valve calibrated at a pressure at which it will open depending on the nature of the heat carrier fluid and on the maximal temperature desired inside the chamber. The Minesa device is a cooling installation which works through a change in phase which can be applied to electronic circuits. The only function of the pressure valve is that it opens at a predetermined or set pressure depending on the nature of the liquid. This is completely contrary to the requirements of applicants claims and there is no suggestion in the Minesi reference as to how this pressure valve could be incorporated into the Cheng apparatus to result in applicants invention. Accordingly the combination is improper under 35 U.S.C. 103.

The applicant's claims require that a first pressure be applied to the heat temperature raising medium and this pressure is then changed from a first pressure to a

second pressure to produce a vapor of the heat temperature raising medium which is then transferred to the heat sink. Neither of these steps are suggested by either of the references relied on by the Examiner.

It is pointed out that the claimed process is an abnormal heat transfer process, whereby the heat will flow from a lower temperature heat source to a higher temperature heat sink, denoted as opposite direction operation, rather than from the natural course of heat flow which is from higher temperature heat source to a lower temperature heat sink. A comparison of the Cheng process, the Minesi process and the claimed process follows:

- A. In Minesi patent number 4,253,518, the temperature of the heat element is higher than its condenser. This heat flow is a normal heat transfer phenomena, and clearly not related to the claimed process. Minesi's process is only a way of deairation for the condensing chamber to improve efficiency of the condenser, The claimed process does not include any deairation step. The only similarity is the name that Minesi used for his operating medium as an "heat carrying fluid". Other than the name of "heat carrying medium", in applicants invention. the two processes do not have any similarity in phenomena between them.
- B. In patent 5,526,653 Cheng uses the phenomena of vapor absorption by solution, and further converts the latent heat of this vapor into sensible heat of absorbing solution to raise the temperature of the solution. After absorption of the vapor, it will then pass the heat to a heat sink. In his patent, Cheng provided a way of abnormal heat flow using vapor absorption to facilitate an abnormal way of transferring the heat

from lower temperature heat source to higher temperature heat sink. Cheng used a mechanism of vapor absorption to raise the temperature of the solution. This patent is similar to the claimed process only in the direction of operation of transferring heat flow, but all of the operating steps between the Cheng patent and the claimed process are different. The claimed process does not use a vapor absorption step, or an absorption solution, and the mechanisms are completely different.

- C. The claimed process is as follows: A heat carrying vapor, denoted as HCM1 vapor, condenses on the surface of the HTR tubes to pass its latent heat of its vapor to melt HTRM inside HTR tubes. The latent heat of HCM1 vapor will become the latent heat of fusion of HTRM. After applying pressure to the HTRM inside of the HTR tube, the melting point of HTRM will increase, and latent heat of fusion of HTRM will elevate to the higher temperature. As one can see, this process is completely different from Cheng's patent process. The only similarity between the claims and Cheng's patent is the abnormal heat flow from low temperature to higher temperature. The processes are thus completely different.

It is submitted that the claimed process is not obvious nor derived from the combination of the two patents referred to. Clearly, the three processes discussed above are completely different from each other. They are different in operating mechanism, and completely different in physical phenomena.

It is submitted that the references are deficient under 35 U.S.C. 103. The Examiner admits that the Cheng patent does not disclose the change in pressure requirements by applicants claims. The pressure valve disclosed in the Minesi reference

does not meet the deficiencies of the Cheng reference. Therefore the references are not combinable to raise a *prima facie* case of obviousness of the applicants claims. It is clear that applicants claims are directed to a novel method for transferring heat from a heat source to a heat sink which has a higher temperature than the heat source. Further the sequence of steps is novel and are neither taught nor suggested by the prior art. For these reasons, it is submitted that the references are clearly insufficient.

In support of applicants position however and to meet the new rejection raised by relevance on the newly cited Minesi patent, there is submitted herewith a Declaration by Chen-Yen Cheng, the inventor named in the reference Cheng patent 5,523,653. In this Declaration Under 37 CFR 1.132, Mr. Cheng acknowledges that he has read and understood this patent application Serial No.: 09/373,605 and understands the invention presented in the claims. Further Mr. Cheng acknowledges that nothing in his '653 patent would make obvious to him that heat could be transferred from a heat source to a heat sink which has a higher temperature than a heat source through the sequence of steps recited in applicants claims. Therefore, to the extent there is any presumption of obviousness resulting from the combination of references, this Declaration should be sufficient to rebut that presumption. It is submitted that this Declaration of Mr. Cheng does not raise new issues at this stage of prosecution but rather is made necessary by the Examiners new citation of the Minesi patent in the Final Rejection. Accordingly, entry of the Declaration is requested and withdrawal of the rejection is believed to be in order.

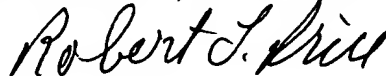
To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this



To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT, WILL & EMERY



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